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WORLD MARITIME UNIVERSITY

Malmö, Sweden

**STUDY ABOUT VOLUNTEER GROUPS’
INVOLVEMENT IN CHINA MARITIME
SEARCH AND RESCUE**

By

QIN HUAPU

The People’s Republic of China

A dissertation submitted to the World Maritime University in partial
Fulfillment of the requirements for the award of the degree of

MASTER OF SCIENCE

In

MARITIME AFFAIRS

(MARITIME SAFETY AND ENVIRONMENTAL ADMINISTRATION)

2013

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DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

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ABSTRACT

Title of dissertation: **Study about the Volunteer Groups' Involvement in China Maritime Search and Rescue**

Degree: **MSc**

According to the International Convention for the Safety of Life at Sea, signatory states have the obligation to provide maritime search and rescue services. In order to comply with this obligation, various forms of maritime search and rescue services have been established all over the world. With the growing economy, merchandise trade and demand for maritime transport, search and rescue has become a higher priority in China. The issue of insufficient coverage of the national maritime search and rescue forces has arisen. In some developed countries, the national search and rescue duty is normally complemented by volunteer groups. This study tries to answer whether the experience gathered in developed countries can be transferred to China and feasible proposals can be made on the involvement of volunteer groups in China maritime search and rescue.

Maritime search and rescue is a skill-based service. Organizing a maritime search and rescue volunteer group needs sufficient funds, advanced equipment, scientific training system and qualified search and rescue volunteers. In this study, the history of maritime search and rescue volunteer organizations both in China and abroad are reviewed. Successful experience of developed countries is summed up. Meanwhile, the contemporary situation in China is examined and some problems identified.

By making comparisons, suggestions are made for China to further involve volunteer groups in maritime search and rescue with recommendations covering political, legal, financial, educational and other relevant aspects.

KEYWORDS: Maritime Search and Rescue, Volunteer Groups, Suggestions

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LIST OF ABBREVIATIONS

AIS	Automatic Identification System
ASR	Air-sea Rescue
BBK	Federal Office of Civil Protection and Disaster Assistance, Germany
CCTV	Closed-circuit Television
CMRCC	China Maritime Rescue Coordination Center
CNMSC	China National Maritime Safety Command Center
CRS	China Rescue and Salvage
DGzRS	German Society for the Rescue of the Shipwrecked
DTSKK	Imperial Japanese Society for Saving and Succoring the Shipwrecked
IAMSAR	International Aeronautical and Maritime Search and Rescue Manuals
ICAO	International Civil Aviation Organization
IMO	International Maritime Organization
JCG	Japan Coast Guard
MLB	Motor Lifeboat
MRCC	Marine Rescue Coordination Center
MRSC	Marine Rescue Sub-center
MSA	Maritime Safety Administration
NSKK	Japan Lifeboat Institution
PR	Public Relations
RCC	Rescue Coordination Center
RNLI	Royal National Lifeboat Institution
SAR	Search and Rescue
SAR 79	International Convention on Maritime Search and Rescue, 1979

SARERP	SAR Emergency Response Plan
SMA	Swedish Maritime Administration
SOLAS	International Convention for the Safety of Life at Sea
SSRS	Swedish Society for the Rescue of Shipwrecked
TSKK	Imperial Japanese Lifesaving Institution
UK	United Kingdom
UNCLOS	United Nations Convention on the Law of the Sea
USCG	United States Coast Guard
VTs	Vessel Traffic System

Chapter I Introduction

1.1 General remarks

In contemporary society, people are facing various kinds of disasters, risks and different threats as a result of industrialization and globalization. Governments are not able to provide sufficient response to all these disasters. That is the reason why volunteers have organized themselves to provide various services to society as a complement to the government efforts. Currently, a mature network of emergency-response volunteer groups has been established in many developed countries. When earthquakes, shipwrecks, fire hazards or other unexpected events occur, volunteers, together with other government forces, participate in the search and rescue (SAR) process, provide first-aid treatment and join in the reconstruction activities. Due to a long history and culture of taking voluntary jobs, volunteer services have become part of life for most people in developed countries. With high enthusiasm and dedicated spirit, many people are using their spare time to participate in a variety of training programs in order to master appropriate skills for emergency services.

China has a vast territory with different kinds of geographical conditions. As a matter of fact, China suffers from disasters more frequently than other countries. It

has been estimated that approximately 200,000 people died in unexpected events each year in China. For example, in 2008, 69,225 people were killed in the Wenchuan Earthquake and the earthquake in Yushu caused 2,220 deaths in 2010 (“Data of Casualties”, 2012). Although China received international assistance when faced with these catastrophes, government rescue teams are still the main force for responding to emergencies. Compared to the growing needs for professional search and rescue forces and equipment, however, government rescue teams gradually became insufficient to cope with catastrophes like the Wenchuan earthquake.

This problem also exists in maritime search and rescue in China. With vast territorial waters (4,730,000 square km) and a long coastline (18,000 km), China is faced with considerable pressure in terms of maritime safety. According to the data provided by China Rescue and Salvage Bureau, from 2003 to August 1, 2013, there were 1,873 vessels and 34,030 people in distress rescued by the government maritime search and rescue forces (China Rescue and Salvage Bureau, 2013). China is now aiming to become a maritime power with frequent maritime transport, prosperous fishing industry, further exploitation of marine resources, flourishing coastal tourism and other activities (Su, 2013). Meanwhile, China is highly dependent on importing resources from outside by shipping each year. In the past ten years, seaborne trade increased at an average rate of 14.8% per year in China. Additionally, the demand for coastal transportation and inland water transportation increased at the average rate of 15.5% and 11% respectively on an annual basis (Jia D. , 2013). People working in the fishing industry increased at a rate of 1.1% each year and over 2000 fishing boats were registered annually (Ministry of Agriculture, 2012). Compared with the growing speed of maritime industries, the development of government maritime search and rescue forces is lagging behind in the last decade. In 2003, China Rescue and Salvage Bureau was equipped with over 30 professional rescue vessels, 8 rescue aircraft and nearly 3000 staff. Currently, more than 40

professional rescue vessels and 12 rescue aircraft have been added but the total number of personnel has not been changed significantly (China Rescue and Salvage Bureau, 2013).

Although most of the maritime search and rescue tasks are still conducted by the government search and rescue forces in China, the capacity of these forces is no longer sufficient to deal with the growing needs. Shortage of maritime search and rescue personnel and equipment, inadequate distribution of rescue forces, weakness in protecting the safety of inland waters and other problems have emerged and put the maritime safety situation under challenge. The demand for developing social search and rescue forces in order to help the Chinese government in fulfilling its obligation has appeared in recent years. Therefore, a new plan has been proposed about how to involve volunteer groups in the maritime search and rescue cause, which is also the focus of this study.

Regarding volunteer services in China, it had not occurred until the late 1980s, when volunteers and volunteer services started to develop and spread after the reform and opening-up policy was adopted. It was a late start compared to many developed countries. During almost 30 years of development, volunteer services and volunteers became widely recognized and respected in China. There are now over 30 million registered volunteers dedicating to a variety of volunteer services such as working for big events like Beijing 2008 Summer Olympics, 2010 Shanghai World Expo, community services like assisting old people and emergency response like firefighting or rescuing victims from earthquakes and floods. Volunteers in China have shown a growing enthusiasm and have made great contribution to the public services. It is therefore worthwhile to investigate into the possibility of building up maritime search and rescue volunteer groups in China.

Nevertheless, volunteers and volunteer services in China still have a long way to go. Due to lack of legal support and limited managing experience, problems have

been detected in regard to organizing, communicating, training and other aspects. Currently, different forms of volunteer organizations have not been distinguished by the authorities in China. Many volunteer organizations were formed unsystematically. Some were registered as social branches of the government services, some were registered as companies to be economically independent, and some were approved by the Ministry of Civil Affairs and became the “authentic” social institutions. To some extent, different registration and managing forms restricted and hindered the development of volunteer groups in China. It is inconvenient to organize and manage these social organizations from a higher level, which also cause difficulties for some organizations to get favorable policies and encouragement from the government. Apart from the organizing problems, insufficient funds are also one of the main barriers preventing the development of volunteer services in China. Some funding methods have not been identified or utilized such as adopting tax-deductible policy on donations. Many volunteer groups are in need of better financial abilities and more fund raising measures. The necessity of conducting this study can also be found from the perspective of volunteers. Some volunteers exposed deficiencies in professional skills which make them of only limited help to first-aid treatment and other emergency response tasks. For example, after the Wenchuan Earthquake in 2008, many people volunteered to join the search and rescue team. However, due to lack of training and knowledge about self-protection, some of them became victims in the aftershock. Untrained volunteers may sometimes slow down the speed of emergency relief, consume limited resources and lower the rescue efficiency and success rate.

With the purpose of responding to maritime emergencies in the areas which government maritime search and rescue forces have not covered due to the limitation of personnel and equipment, some maritime rescue volunteer groups have been established along the coastline and inland waters in recent years. Organizing, training,

financing and other problems are also found in these newly established groups. Maritime rescue volunteer groups were registered at different authorities, which caused difficulties for the government in coordinating these rescue forces efficiently. Meanwhile, many maritime search and rescue tasks were conducted by local fishermen or nearby swimmers who acted as individual volunteers without taking part in any volunteer groups. Attracting them to join a registered volunteer group and giving them professional training will gradually enhance the maritime safety situation in China. Currently, only a few studies have been conducted to discuss how to develop maritime search and rescue volunteer groups in China. A systematic and feasible plan to better involve volunteer groups in assisting national maritime search and rescue forces is in urgent need.

Based on the relevant laws in China, maritime lifesaving is non-profit work. Volunteers and other social forces who participate in maritime search and rescue are supposed to be able to cover the costs to conduct rescue services. However, in order to motivate and maintain the enthusiasm of volunteers, various forms of non-monetary incentive measures could be adopted.

China has attached more and more importance to the development of volunteer groups in the past few years. Some laws and regulations were put forth in supporting and encouraging the establishment of maritime search and rescue volunteer groups. Because of the socio-economic development, the deepening reform of the administrative system and the further transformation of government functions, China has now cultivated an internal motivation for promoting voluntary services. From the external sight, many developed countries have already formed mature and effective maritime search and rescue volunteer systems, which provide China with precious experience in various aspects. Based on the objective to help the Chinese government in establishing a stable, reasonably-compensated, technically-qualified maritime search and rescue volunteer force, this study will discuss the problems existing in

China's current maritime search and rescue system, summarize the successful experience achieved by some developed countries and make suggestions on further involving maritime search and rescue volunteer groups in China, providing practical suggestions on improving disaster prevention and mitigation ability of the government, to protect people's lives and property and maintain the stable and sustainable development of society.

1.2 Objectives of the dissertation

The first objective of this dissertation is to introduce the definitions of Search and Rescue at sea and Volunteer Services, identifying the defects of non-governmental organizations by the Failure Theory and analyzing the motivation of volunteers by the Incentive Theory. The characteristics of maritime search and rescue volunteer groups will be summarized.

The second objective is to examine the current situation of maritime search and rescue volunteer groups in China. The problems they are facing will be pointed out. The development and present situation of maritime search and rescue volunteer groups in some developed countries will be studied and their successful experiences, which could be widely utilized, will be highlighted.

The third objective is to compare maritime search and rescue volunteer groups of China with those of developed countries, indicating and analyzing the developing strategies for China maritime search and rescue volunteer groups.

The fourth objective is to make proposals and recommendations on establishing an effective mechanism for recruiting, training and managing SAR volunteers as well as running and financing maritime search and rescue groups in China. Feasible measures will be provided to improve the anti-disaster and emergency-response capacity of China.

1.3 Methodology of the dissertation

The methodological approach to this dissertation is to combine various methods to explore the differences between current maritime search and rescue volunteer groups in China and those in developed countries so as to propose suggestions on developing maritime search and rescue volunteer groups in China. The methods to be used include:

Comparative method: Compare the history, current situation, mechanism and management of maritime search and rescue volunteer groups between China and some other countries, indicate the problems of maritime search and rescue volunteer groups in China and provide suggestions on coping with the problems as well as making improvements.

Literature research method: Collect sufficient background information, primary data, relative theories and regulations on volunteer management by a general literature review of relevant theses, magazines, websites and books, providing the theoretical and empirical foundation for this study.

Empirical analysis method: The performance of maritime SAR volunteers will be used as the object of study, the quality of volunteer management will be analyzed and successful managing experiences will be summarized.

1.4 Structure of the dissertation

This dissertation consists of six chapters. By introducing theories from psychology, organization behavior science and human resource management, the dissertation will analyze the current situation and identify the problems of maritime search and rescue volunteer groups in China, sum up the successful experiences of some countries in developing SAR volunteer groups, make comparison between

China and some other countries and propose strategies for developing maritime search and rescue volunteer groups in China.

After a brief introduction in the first chapter, the second chapter will illustrate the legal framework, the concepts and theories relevant to this dissertation, such as The International Convention for the Safety of Life at Sea (SOLAS), International Convention on Maritime Search and Rescue (SAR Convention), SAR at sea, Volunteer Services, as well as the Failure Theory and the Incentive Theory. Furthermore, the chapter will summarize the characteristics of maritime search and rescue volunteer groups.

The third chapter will describe the development of maritime search and rescue volunteer groups in the UK, Sweden, Germany and Japan, summarizing successful experiences by examining their advanced mechanisms and management systems.

The fourth chapter will review the development of maritime search and rescue in China, analyze the current situation of China and its maritime search and rescue volunteer groups, discussing the problems they are faced with.

The fifth chapter will explore the methods to solve the problems that China has when developing maritime search and rescue volunteer groups, making proposals on how to establish an effective mechanism for recruiting, training and managing maritime SAR volunteers and how to successfully finance maritime search and rescue groups in China. This chapter will provide suggestions on improving the anti-disaster and emergency-response capacity of China.

The sixth chapter will summarize the main points of the research and to draw overall conclusions.

Chapter II Background to SAR and volunteer services in society

2.1 Introduction

As a matter of fact, maritime hazards and distress cannot be completely avoided due to different factors such as human errors and other external factors. Maritime activities are still bearing the risky nature that no matter how advanced the technological standards are, an external protection is always in need. Without maritime search and rescue, maritime activities would be exposed to a range of dangers. Therefore, maritime search and rescue plays the role as the last shackle of the maritime safety chain, which is of great importance to the maritime industry.

With a long history of development, maritime search and rescue services have now become not only an international humanitarian assistance, but also a key safeguard of economic development in a state. International treaties and conventions regarding maritime search and rescue obligations were laid down and signed worldwide. In the practice of fulfilling maritime search and rescue obligations, some countries have displayed strong capabilities in conducting search and rescue tasks while some other countries have exposed weaknesses of various degrees in different ways. Developed countries such as the UK, Germany, Sweden and Japan have adopted advanced maritime search and rescue volunteer systems with a variety of

successful managing practices to meet their national search and rescue needs and the responsibilities they have taken from relevant international treaties and conventions. As a party to the international conventions such as SOLAS 1974, SAR 1979 and United Nations Convention on the Law of the Sea 1982 (UNCLOS 82), China is also exploring suitable ways to better fulfill its obligations. When faced with the shortage of government search and rescue forces, whether China can successfully involve volunteer groups in assisting maritime search and rescue services came out as the first question to be answered.

Before studying the history of maritime search and rescue volunteer groups in developed countries and summarizing their successful experience which might be applied to China, the background to SAR and volunteer services in society should be examined to get a clear understanding of what legal liabilities China should undertake, what kind of work maritime search and rescue volunteer groups should do, what a volunteer service is and what the theories are describing the nature of non-profit organizations and the motivation of volunteers. Last but not least, a conclusion of the characteristics of maritime search and rescue volunteer groups should be drawn as a basis for making suggestions on developing maritime search and rescue volunteer groups in China.

2.2 Legal framework of maritime search and rescue

The earliest humanitarian assistance at sea includes the practice of ships responding to signals of distress sent by other vessels in danger. After a long-term practice, this tradition expanded worldwide and developed into various treaties signed by different states to provide search and rescue services internationally. The legal framework covering the maritime search and rescue services can generally be divided into international agreements and national legislation. In most countries,

maritime search and rescue services and legislations have been highly influenced by three important international conventions, namely, the International Convention for the Safety of Life at Sea (SOLAS), the International Convention on Maritime Search and Rescue (SAR Convention) and the United Nations Convention on the Law of the Sea (UNCLOS).

2.2.1 SOLAS convention

In 1914, the first Convention on Safety of Life at Sea (SOLAS) was adopted as an international response to the sinking of the Titanic which over 1,500 crew members and passengers lost their lives. It was not until then that the notion of human lives at sea had priority over properties and the concept of maritime safety system came into being.

Currently, the SOLAS Convention 1974 as amended is regarded as one of the most important maritime safety instruments. Regulations regarding maritime search and rescue services are mainly contained by Chapter V - Safety of Navigation. In this chapter, certain navigation safety services are identified for contracting governments to provide. Provisions which can be generally applied to all vessels on all voyages are also set forth by this chapter. In chapter V, Regulation 7 - Search and Rescue Services states that:

“Each Contracting Government undertakes to ensure that necessary arrangements are made for distress communication and co-ordination in their area of responsibility and for the rescue of persons in distress at sea around its coasts. These arrangements shall include the establishment, operation and maintenance of such search and rescue facilities as are deemed practicable and necessary, having regard to the density of the seagoing traffic and the navigational dangers and shall, so far as possible, provide adequate means of locating and rescuing such persons” (SOLAS,

1974).

In chapter V, general obligations to provide necessary assistance to those in distress are also clarified for masters. In addition, contracting governments are required to ensure that all ships shall be sufficiently and efficiently manned from a safety point of view (SOLAS, 1974).

2.2.2 SAR convention

Although the obligation of rendering assistance to ships in distress was identified in SOLAS, UNCLOS and many other international treaties, there was no specific definition of what can be expected from the contracting states in terms of search and rescue services. This resulted in the different levels of SAR services provided in different states. Therefore, legal criteria were in need to set down the basic rules and principles in regard to search and rescue operations. In 1979, the International Convention on Maritime Search and Rescue (SAR Convention) was adopted as a response to this matter. The adoption of the SAR Convention has also improved and integrated the existing SAR procedures, making SAR coordination and cooperation between different SAR authorities more efficient.

In order to facilitate the implementation of the SAR Convention in contracting states, the International Aeronautical and Maritime Search and Rescue Manuals (IAMSAR) were jointly published by IMO and the International Civil Aviation Organization (ICAO), providing guidelines for organizing and conducting search and rescue tasks.

The adoption of SOLAS 1974 and the SAR Convention, together with the additional IAMSAR manuals, has generally formed the basic legal framework for today's search and rescue operations all over the world. Nevertheless, the quality of search and rescue services provided by different contracting nations still vary from

one another due to the capability of every individual state.

2.3 Basic definitions

A review of the legal framework of international SAR services has answered the question of what obligations are supposed to be assumed by a responsible coastal state. In order to develop maritime search and rescue volunteer groups to assist China in fulfilling its obligations, a clear understanding of search and rescue services and volunteer work should be adopted.

2.3.1 Search and rescue

Search and rescue (SAR) is the search for and provision of aid to people who are in distress or imminent danger. According to the Canadian Forces:

“Search and Rescue comprises the search for, and provision of aid to, persons, ships or other craft which are, or are feared to be, in distress or imminent danger.” (Canadian Forces, 2008)

The United States Coast Guard described search and rescue as:

“Search and Rescue is the use of available resources to assist persons or property in potential or actual distress.” (USCG, 2004)

In practical conditions, search and rescue is a general concept which actually includes many special sub-fields, normally determined by the type of terrain the search and rescue work is conducted over. In addition to the air-sea rescue over water which will be discussed in this study, search and rescue also include the ground search and rescue, mountain rescue, combat search and rescue on the battlefield, urban search and rescue in cities and so on.

Different nations have different authorities and forces to conduct search and rescue work in their territorial waters. According to SOLAS, international waters are

divided into a variety of regions.¹ For example, in the Arctic, search and rescue responsibilities have been governed by the Arctic Search and Rescue Agreement since May 2011.

2.3.2 Volunteer services

Volunteer services are generally considered as selfless and altruistic activities with non-financial gain but an intention to promote well-doing and to improve the quality of people's lives. Without being paid, volunteers are pursuing for a feeling of being respected and self-worthy. Furthermore, volunteer services are also considered as good chances to have fun, socialization and skills development. In addition, volunteer services have a close relationship with different employments in various industries. According to the practical needs, some volunteers serve on the as-needed basis, such as in response to a natural disaster, some are stand-by without any special training because the work does not need any expertise, while some others are specifically trained in the areas they work, such as emergency rescue, education and medicine.

Currently, modern society shares a common value of helping each other. Volunteer services provide assistance to people who need help, and at the same time, they benefit the volunteers on a personal level. Nevertheless, similar objectives sometimes bring about confusion between volunteer groups and state provided services. Some countries have carried out policies and have implemented laws to clarify the relationship and roles of the volunteer groups and the governmental organizations, identifying and allocating the necessary financial, social, legal and administrative support to each party.

There are many types of volunteer services. In contrast to the traditional

¹ For detailed information, please visit the United Nations Atlas of the Oceans website:
<http://www.oceansatlas.com/index.jsp>

volunteer services, where specific training is not necessarily required, maritime search and rescue volunteer service is a skill-based and emergency-response volunteer service:

“Skill-based volunteering is leveraging the specialized skills and talents of individuals to strengthen the infrastructure of nonprofits, helping them build and sustain their capacity to successfully achieve their missions.” (Davis, 2008)

Volunteers have played an important role in the recovery efforts after the occurrence of natural disasters, such as earthquakes, floods, hurricanes, tsunamis and droughts. In 2004, thousands of volunteers from all over the world were assisting in the rescue and recovery process after the Indian Ocean earthquake and tsunami happened. These emergency-response volunteers were developed by the United Nations, government agencies and the non-governmental organizations. (Power, 2005)

2.4 Theories regarding volunteer services

Volunteer services are complementary activities for government and market functions. Volunteer services are non-profit, independent, voluntary and public. The existence of volunteer services will improve social services, enhance social development and promote social harmony. However, volunteer services also have some limitations. A discussion about advantages and disadvantages of volunteer services can assist the consideration of whether or not the volunteer groups should be encouraged to participate in maritime search and rescue in China.

2.4.1 Non-profit organizations failures

There have been a great deal of research and theories trying to study and describe the nature of volunteer services. One of the most representative theories is

Lester Salamon's "Non-profit organizations failures" theory². According to Salamon's study, non-profit organizations in general have the following shortcomings (Salamon, 1987):

(a) There is usually a gap between the expenditure for non-profit activities and the fund that can be actually raised. Different from the government and the profit-organizations, the main financial sources of non-profit organizations are public donations, government subsidy and relevant service fees. However, public donation and service fees can only cover a small portion of the total amount.

(b) Paternalistic style is often found in non-profit organizations. The one who controls the main economic resources normally has a stronger voice in administrating and using the resources. This neglects the majority's opinion and reflects the lack of supervision.

(c) Non-profit organizations have an amateur nature. The service of these organizations is normally conducted by volunteers who have a good will but not necessarily have the professional skills. This creates difficulties in guaranteeing the quality and stability of the services.

Salamon's theory may apply to non-profit organizations in general but some of his arguments do not match the real cases in the search and rescue context. For example, the costs of providing maritime search and rescue services from volunteer groups have long been covered by public donations in Sweden, Germany and the UK. Moreover, a variety of SAR training and exercise has been provided to volunteers that have effectively improved their SAR skills.

The question of how to keep volunteers motivated should always be considered when organizing volunteer groups. Volunteers are the indispensable factors of

² Lester M. Salamon (born 1943) is a professor at The Johns Hopkins University. He was a pioneer in the empirical study of the nonprofit sector in the United States, and is considered by many experts in his field to be a leading specialist on alternative tools of government action and on the nonprofit sector in the U.S. and around the world.

volunteer services. Every volunteer has his or her internal needs which drive them to participate in various volunteer services. Incentive theory can guide this study to explore the effective incentive mechanism which may cater to the needs of maritime search and rescue volunteers.

2.4.2 Incentive theory

Early studies of motivation theories took “needs” as the center, answering questions like in what circumstances, or by using what methods can people be motivated with enthusiasm. These theories include Maslow's “Hierarchy of Needs Theory”³, Herzberg's “Two Factor Theory”⁴ and McClelland's “Achievement Motivation Theory”⁵. Among all the theories, Maslow's “Hierarchy of Needs Theory” is the most famous one. He used the terms “Physiological, Safety, Belongingness and Love, Esteem, Self-Actualization and Self-Transcendence needs” to describe the pattern that human motivations generally move through. Maslow's hierarchy of needs is often portrayed in the shape of a pyramid with the largest, most fundamental levels of needs at the bottom and the need for self-actualization at the top. The most fundamental and basic four layers of the pyramid contain what Maslow called “deficiency needs” or “d-needs”: esteem, friendship and love, security, and physical needs. If these “deficiency needs” are not met – with the exception of the most fundamental (physiological) need – there may not be a physical indication, but the

³ Abraham Harold Maslow (April 1, 1908 – June 8, 1970) was an American psychologist who was best known for creating Maslow's hierarchy of needs, a theory of psychological health predicated on fulfilling innate human needs in priority, culminating in self-actualization. Maslow was a psychology professor at Brandeis University, Brooklyn College, New School for Social Research and Columbia University.

⁴ Frederick Irving Herzberg (April 18, 1923 – January 19, 2000) born in Massachusetts was an American psychologist who became one of the most influential names in business management. He is most famous for introducing job enrichment and the Motivator-Hygiene theory.

⁵ David Clarence McClelland (May 20, 1917 – March 27, 1998) was an American psychological theorist, noted for his work on Need Theory, publishing a number of works in the 1950s-1990s and developing new scoring systems for the Thematic Apperception Test and its descendants. McClelland is credited with developing the Achievement Motivation Theory commonly referred to as need achievement or n-achievement theory.

individual will feel anxious and tense. Maslow's theory suggests that the most basic level of needs must be met before the individual will strongly desire (or focus motivation upon) the secondary or higher level needs. Maslow also coined the term Metamotivation to describe the motivation of people who go beyond the scope of the basic needs and strive for constant betterment (Maslow, 1943).

With the development of economy, the question of motivation emerged due to the division and trading of labor. According to the Incentive Theories, people's motivation derived from their needs and the needs determine people's goals. Motivation affects people's mind, inspire, drive and enhance their behavior. Therefore, the incentive theory has become the core theory in explaining the complicated relationships among need, motivation, goal and behavior. A clever use of incentive theories in managing and motivating volunteers will benefit volunteer groups in the long run.

2.5 Characteristics of maritime SAR volunteer services

Before volunteer services are discussed in the context of search and rescue, a few more specific pieces of information about search and rescue should be given.

As it was mentioned before, search and rescue is divided by the type of terrain that it is conducted over. Maritime search and rescue is carried out at sea, inland waters and other waters. Because of this factor, maritime search and rescue volunteer services are by nature different from other volunteer services. Comparatively speaking, it has the following five characteristics:

2.5.1 High risk

Maritime search and rescue volunteer services are work with high risk. Compared to traditional ground volunteer services, maritime distress normally

happens when there is bad weather and rough sea conditions. Rescuers are risking their own lives during the implementation of search and rescue. Therefore, maritime search and rescue volunteers should be well-informed of the working conditions and be mentally and physically suitable for taking this risky volunteer service.

2.5.2 High requirements for professional skills

Because of its high-risk nature, requirements of becoming a maritime search and rescue volunteer are higher than most voluntary work. In addition to a good physical condition, qualified maritime search and rescue volunteers should be familiar with, and have a good command of lifesaving knowledge and skills which can help them to save themselves and other people.

2.5.3 Strict training

The training of maritime search and rescue volunteers is crucial for their own safety and the success of search and rescue cases. It must follow a strict and scientific procedure to make sure the volunteers are 100 percent physically and psychologically qualified. Meanwhile, volunteers are supposed to participate in various drills regularly to improve their emergency-response ability and acquire practical experience.

2.5.4 Wide coverage of various types of work

Maritime search and rescue is a systematic task which involves a wide range of work, such as coordination, cooperation, mutual support among various parties. Apart from carrying out search and rescue missions, volunteers are supposed to provide training for other people, conduct first-aid treatment, promote the knowledge

about safety at sea to the public and participate in the daily management as well as fund raising activities.

2.5.5 High management costs

Generally speaking, the cost of maintaining and developing a maritime search and rescue volunteer group is higher than a common volunteer team. The reason is that the main expenditure of a maritime search and rescue volunteer team includes buying the personal insurance for each volunteer, adding relevant equipment for training and exercise and compensating groups or individuals who participated in the search and rescue missions.

2.6 Concluding remarks

This chapter reviews the legal obligations to provide maritime search and rescue services, introduces the idea of volunteer services and illustrates the theories as well as discussions about volunteer organizations. Furthermore, the chapter also describes the common nature of maritime search and rescue volunteer services, which should be taken into consideration when making suggestions on developing maritime SAR volunteer groups in China.

In the next chapter, a review of how SAR and volunteer organizations can work together is done.

Chapter III Maritime search and rescue in developed countries

3.1 Introduction

After World War II, international maritime transportation experienced a rapid development. At that time, maritime search and rescue services became insufficient for the growing needs from a global perspective. According to statistics, vessel traffic accidents had increased by 80% from the 1950s to the 1970s, causing 20% increase in terms of damage (IMO, 2008).

The establishment of IMO has facilitated the development of a world maritime safety system. International conventions, treaties and regulations were laid down to clarify the obligations of contracting states in promoting the safety at sea. By the end of the 1970s, some developed countries had basically established a sound maritime search and rescue system. The damage caused by vessel traffic accidents were decreased by 50% internationally at the end of the 1980s (IMO, 2008).

Compared to developed countries, China had a late start in building a systematic maritime search and rescue service. In 1974, China National Maritime Safety Command Center (CNMSC) was established to command and coordinate maritime search and rescue across the country. With nearly forty years development, the national emergency-response capacity and SAR efficiency have gradually been

improved. As it was mentioned in the previous chapter, government maritime search and rescue forces alone have become insufficient for the actual needs of society. An investigation into whether or not volunteer groups can be involved in China maritime search and rescue should be carried out as soon as possible.

Both volunteer services and maritime search and rescue services are internationalized. Moreover, both of them are bearing the spirit of humanitarianism. As the basic standards and principles of SAR operations were regulated by SOLAS and the SAR Convention, there lies the possibility that successful experience of involving volunteer groups achieved by some developed countries could be applied to China maritime search and rescue.

In this chapter, some developed countries are chosen to be the typical examples which demonstrate that SAR and volunteer organizations can work together harmoniously. The reason for choosing these countries is that they all have a long history of successfully developing maritime SAR volunteer groups. Rich experience in terms of legislation, cooperation, training, financing as well as incentives can be summed up as good reference for making suggestions to China.

3.2 United Kingdom

3.2.1 History of coastal lifesaving

Britain is full of historical records as “the first” in terms of lifeboats and coastal lifesaving. Because of this reason, the nation is also called “the cradle of lifeboat” (Evans, 2003). Before the invention of a professional lifeboat, most efforts to assist victims in shipwrecks were conducted by private citizens who either worked on, or lived near the coast.

In 1751, the world’s first charitable organization in helping shipwrecked

victims was established by the Trustees of the Bishop Crewe Estate at Bamburgh Castle in Northumberland. Most of its organizational structure remained for the next 75 years when the status of lifesaving around the British coast waxed and waned. In 1824, the Royal National Institution for the Preservation of Life from Shipwreck was established to be recognized as the RNLI in 1854. From then on the organization would flourish into one of the most successful the world has ever known. The RNLI helped lead the way internationally with advice and assistance on both operating structures for lifeboat organizations in other countries as well as lifeboat design and technology (RNLI, 2012).

From a technological perspective, Great Britain and the RNLI made a great contribution to the development of the steam lifeboats from the 1880s. In more recent years, the RNLI has switched from the old displacement-type lifeboats to high-speed self-righting lifeboats. Another British innovation has been the invention and early development of the right-hull inflatable rescue craft, possibly the most widely used type of lifesaving vessel in the world today (RNLI, 2012).

3.2.2 Royal National Lifeboat Institution (RNLI)

Today, the RNLI remains one of the largest and most successful private, non-profit, volunteer maritime lifesaving agencies in the world. It has 224 lifeboat stations in the United Kingdom and Ireland and approximately 4,500 volunteer crewmembers within the organization. Each all-weather lifeboat employs a full-time mechanic and every crewmember receives basic compensation to cover their expenses each time they are called out. The RNLI remains entirely dependent on voluntary contributions for income with a considerable amount of revenues now coming from private donations. The institution is also the permanent secretariat for the International Lifeboat Federation (ILF), whose headquarters are co-located at

Poole, Dorset (RNLI, 2012).

The RNLI is not the only organization in Great Britain concerned with coastal and maritime SAR. There are still a multitude of local and county organizations, both volunteer and state-funded, that provide vessels for lifesaving within specific jurisdictions. The Maritime and Coastguard Agency still oversees the operation of the volunteer coastal rescue units. The coastguard maintains the principle SAR coordination role for all UK waters through a network of integrated coast radio stations and rescue coordination centers. This service also charts a fleet of dedicated SAR helicopters strategically positioned around the country.

3.3 Sweden

3.3.1 History of coastal lifesaving

In the 13th century, a Swedish regent by the name of Birger Jarl issued a proclamation against robbing and the ill treatment of the shipwrecked. This is one of the earliest laws against pillaging shipwrecked. In 1692, the Södra Dykerikompaniet (Southern Diving Company) was established with the primary objective of saving vessels and goods on the occasion of shipwrecks. The Swedish King, Charles XI, issued an edict to this company with instructions for the rescue and treatment of the survivors of such wrecks (Hägg, 1936). There is no evidence to show whether the “Diving Company” used lifesaving boats but it is no doubt that this was one of the first known examples of organized humanitarian effort towards helping the shipwrecked in the world.

By 1831 the Diving Company had ceased to exist. From 1810 to 1820, many private individuals tried to convince the Swedish Parliament to purchase the “English Type” lifeboats to be put at some dangerous coastal areas. But the government

rejected this proposal (Hägg, 1936). No further attempts to establish lifesaving facilities were made until the Royal Naval Society of Sweden took up the cause in 1852. The society published a description of the facilities and vessels that had been established in the neighboring Denmark and put forward a proposition to the government to establish a similar service and facilities. Its proposal was accepted. By the year of 1888, 18 state-funded lifesaving stations were established around the country.

However, a severe storm happened on September 9-10 in 1903 along the Swedish coast and resulted in considerable losses of lives. At this time, the state-operated lifesaving stations were down to 15, which was inadequate for the real need. People started to realize that private efforts should be initiated to expand the facilities. Many individuals and organizations, such as the Swedish Shipping Society, spared no effort in raising a considerable fund for the cause. Therefore in June 1907, the Svenska Sällskapet för Räddning af Skeppsbrutna (SSRS), Swedish Sea Rescue Society was established as a private, voluntary lifesaving organization (SSRS, 2012).

The first lifeboat of the society was a Danish pulling and sailing surfboat which was built at the Royal Naval Shipyard in Copenhagen (Stenberg, 1936). After recognizing the success of internal-combustion engines in the fishing industry in 1904, the SSRS began to evolve with technology and experimented with different kinds of mechanical propulsion. In 1911, the society intended to build the first motor lifeboats (MLBs) in Sweden. By taking the advice from the UK and Norway, the SSRS created ketch-rigged patrolling lifeboats and then in 1917, a purpose-built offshore sailing MLB was constructed with a large engine and accommodation for several crews. Two of these were built with one attending the first International Lifeboat Conference in London in 1924. The patrolling concept was a success in Swedish waters because the vessels were only used seasonally. For example, according to the record, the two boats saved more than 130 lives in 1927 ("The

Patrol Service”, 1928).

Through this period, the state-run lifeboat service also continued in Sweden. From its establishment in 1855 to 1933, the Swedish Lifesaving Service saved 2,289 persons by using lifeboats and other means at their disposal. Ten governmental lifeboat crews lost their lives in the call of duty (Hägg, 1936). The service carried on for some more years but was eventually surpassed by the volunteer organization. From the Second World War till now, the SSRS continued to develop new lifeboats according to different needs of different kinds of vessels.

3.3.2 Svenska Sjöräddningssällskapet (SSRS)

Swedish Sea Rescue Society is a non-profit volunteer organization with no government funding. Its main financial sources are membership fees, donations and voluntary work. In recent years, SSRS has doubled the number of maritime rescue stations and tripled the number of SAR volunteers. Meanwhile, the society has built 70 modern rescue vessels. This expansion and these developments have enabled SSRS to meet its goal of “departing within 15 minutes or less from the time an alarm is received” (SSRS, 2012). At present, the society is responsible for up to 70% of all SAR tasks in Sweden.

The society now has 2,000 volunteer crew members. They come from different working backgrounds, such as fishermen, teachers, doctors, carpenters, salesmen and plumbers. These volunteers are very dedicated and willing to respond to a call of duty at any time in any weather even at mid-night or during daily working hours. That is why the SSRS is available 24 hours for SAR missions anywhere along the Swedish coastline and in the major lakes. Moreover, volunteer crews normally live near the rescue stations and they carry out training several times a month (SSRS, 2012).

Having more than 81,000 members, the SSRS is using the membership fees to cover the costs of normal activities. Because voluntary work takes on almost all the work, the SSRS is actually managing with a small administration (SSRS, 2012).

Currently, the overall responsibility for the provision of maritime SAR within the designated jurisdiction in Sweden goes to the Swedish Maritime Administration (SMA). The SMA operates a Maritime Rescue Coordination Center (MRCC) in Göteborg and a Maritime Rescue Sub-center (MRSC) in Stockholm. Another branch of the administration, the Swedish Coast Guard, is responsible for law enforcement at sea and environmental protection and has several patrol boats and large cutters that can carry out SAR tasks. The Swedish Air Force provides helicopters for SAR and offshore maritime patrol (Evans, 2003).

3.4 Germany

3.4.1 History of coastal lifesaving

The earliest introduction of organized coastal lifesaving facilities in and around Germany involved the provision of one or two Greathead lifeboats in about 1802. At first the Prussian government and local shipping interests had the intention to establish coastal lifesaving services on both the North Sea and the Baltic coasts. However like many other countries, this idea rapidly deteriorated. In 1854, an English-style self-righting lifeboat was built. It was administrated by the local pilotage authorities and manned by volunteers (RNLI, 1854).

In spite of the well-intentioned but localized measures, dozens of shipwrecks and loss of lives continued along the greater part of the German coast. For example, in November 1854, the emigrant ship “Johanne” had barely reached open sea when the weather turned bad. The ship and her 200 passengers were tossed about for days

and eventually stranded off the East Frisian island of Spiekeroog because of leaking. 84 people were lost and many more suffered severe injuries. In spite of this tragedy, accidents continued to happen until local officials took on the responsibility of aiding the shipwrecked. From 1854 to 1861, 64 ships ran aground and 118 people lost their lives. Most of them could have been saved. The idea of adopting lifeboats spread and local societies were established one by one on the North Sea and the Baltic (Evans, 2003).

On May 29, 1865, an organization that later on became the national organization- Deutsche Gesellschaft zur Rettung Schiffbrüchiger (DGzRS, German Society for the Rescue of the Shipwrecked) was established. This new institution is based in Bremen and its first president was the prominent businessman, H.H.Meier, founder and Chairman of the North German Lloyd Shipping Line. Within 10 years after the establishment, the society developed 91 lifeboat stations on the North Sea and Baltic coasts and saved more than 870 lives. By 1885, the DGzRS had taken over all the local societies, including the state-operated stations in Prussia. By the turn of the century, over 120 stations were established and “more than one thousand voluntary lifeboat men were at the institution’s disposal” (Klein, 1983). The DGzRS also conducted some of the earliest experiments in the development of MLBs, including the introduction of less volatile diesel engines (DGzRS, 2011).

The First World War had devastating effects on DGzRS, so membership fell off and the large financial reserves became a total loss through depreciation. From 1925, the DGzRS started to motorize the existing smaller pulling boats. The modernization efforts between the wars combined with the installation of wireless communications in the lifeboats allowed the DGzRS to reduce its rescue stations to 101, with 84 lifeboats and 68 rocket installations in service by 1939 (Middleton, 1977).

By the end of the Second World War, the DGzRS, one of the world’s greatest lifeboat institutions once again touched the bottom. With the foundation of the

German Democratic Republic in the east, the activities of the DGzRS were limited to West Germany and the rescue stations shrunk into 23. However, the DGzRS was undaunted. With the support from the temporary government, the institution started its financial and infrastructural reconstruction. After 1945, the DGzRS began a program which eventually designed the first German “rescue cruisers”, large self-righting lifeboats with high speed.

3.4.2 Deutsche Gesellschaft zur Rettung Schiffbrüchiger (DGzRS)

Since the establishment in 1865, the DGzRS has evolved into one of the most efficient and inspirational lifesaving organizations in the world. By operating large “rescue cruisers”, the DGzRS has promoted the “daughter-boat” approach to lifeboat operations. Furthermore, DGzRS is one of the few private organizations which have been granted the right to operate MRCC on behalf of the government.

100 years after its establishment, the role of DGzRS as sole maritime rescue service provider was written down in the “Maritime Responsibility Act” in Germany. In March 1982, the German Ministry of Transport formally granted the coordination, administration and undertaking of SAR services to the DGzRS. Both parties reached an agreement that the “DGzRS would continue to carry out SAR services as a charity on an independent, voluntary basis and financed by its own funds (DGzRS, 2011)”. As a matter of fact, the DGzRS took a public duty without any public funding which is supposed to be subsidized to the non-profit organizations. The DGzRS is entirely supported by voluntary contributions, particularly by member donations. There are approximately 300,000 members who are sustainably providing financial support in keeping the glorious mission continuing. Various provisions have been adopted in order to make sure that the funds entrusted to the DGzRS are appropriately used for

SAR missions or set aside for some mid-term or long-term projects. DGzRS now boasts 180 full-time employees and about 800 SAR volunteers who are ready for call of duty at any time in any weather. There are 40 rescue boats and 20 rescue cruisers within the organization. Moreover, 54 rescue stations are located both in the North Sea and the Baltic Sea. MRCC in Bremen is in charge of coordinating all SAR missions (DGzRS, 2011).

The following description is how the DGzRS board of Chairmen operates:

“The highest legislating body is the steering committee. Its main duties include support to and nomination of the board, amendments to the statutes and regional representation. Three full-time directors are responsible for the areas of rescue service/operations, business administration and finance, as well as press and PR activities (DGzRS, 2011)”.

The DGzRS is not completely the single force who is doing humanitarian work at sea. It is one of the old seafarer's principles that all vessels in the area should provide assistance when there is an emergency or shipwreck. In Germany, there is a perfect cooperation between the DGzRS and many other authorities, such as the Federal Police, the Water Police, the Fishery Inspection, the customs and the Waterway Administration. In addition to the government authorities, DGzRS also work with organizations like the German Auto-mobile Club, German Lifeguard Association and on-shore rescue services. Furthermore, the DGzRS and the German Navy have signed a contract that the MRCC can directly request navy helicopters in a very short time for SAR use. The navy airmen are helping to recover injured and sick people from ships in distress. Additionally, the navy helicopters also assist the DGzRS by transferring firefighters, medication and necessary materials to the rescue boats or the ship in distress. Rescue crews and navy airmen are doing regular exercises and drills to improve their collaboration in true cases.

3.5 Japan

3.5.1 History of coastal lifesaving

In 1888, the Prime Minister Kuroda of Japan took a tour of European countries, including Russia, where he was deeply impressed by the working of the Imperial Russian Lifeboat Society. On his return to Japan, Kuroda visited a famous shrine devoted to the safety and protection of mariners. The chief Priest of deity, whose name is Hirosune Koto-oka, felt that it was his responsibility to establish a similar organization in Japan after listening to the Prime Minister's description of the lifesaving services in Russia. Thus in 1889, Hirosune established the Dainippon Teikoku Suiman Kiusai Kwai (DTSKK - the Imperial Japanese Society for Saving and Succoring the Shipwrecked). The society established a few lifesaving stations, but stopped its development for many years after the passing away of Hirosune in 1892 (Evans, 2003).

One of Japan's principle food sources is seafood. In the late 1800s and the early 1900s, industrialization was spreading in Japan and its population was increasing at the same time. Subsequently, the fishing fleet and fishermen were growing rapidly. According to one record, by 1925 there were about 42,000 registered inshore fishing vessels in Japan (Evans, 2003). The demand for an organized coastal lifesaving force reached a higher level than ever. In 1896, the Japanese Parliament requested the government to take the responsibility of organizing a lifesaving service. Instead of creating a new organization, the Japanese Crown Prince chose to sponsor the DTSKK, granting an annual subsidy for the society (Yoshii, 1925). By 1899, the society had established 17 stations on the coast of Japan fully provided with lifeboats and lifesaving apparatus, the boats being manned by volunteer crews (RNLI, 1997).

By 1923, the society had boasted 176 rescue craft, 9,700 volunteers and 83 lifesaving stations. At that time, most of the rescue craft were fishing vessels and coastal pulling boats. Soon after that, the society began to design and construct purpose-built MLBs based on European designs. By 1935, there were 36 MLBs in service and in the same year, the society decided to simplify its name to Teikoku Suinan Kyusai Kai (TSKK - The Imperial Japanese Lifesaving Institution). However, the infrastructure in Japan was severely destroyed during the Second World War. The TSKK was weakened from 214 lifeboats to 16 vessels and ceased to exist (“Outline of Maritime”, 1955).

In 1948 the country was governed by the Allied Occupation Forces Command of General Douglas MacArthur and a decision was made to establish a maritime safety organization similar to that of the United States Coast Guard (USCG). In May 1948, the Japanese Maritime Safety Board was formed to be responsible for multi-tasks on the coast and oceans around Japan. The organization today is known as the Japan Coast Guard and remains the primary maritime safety agency for the nation (JCG, 2013).

Nevertheless, the idea of the non-governmental volunteer rescue service had not disappeared in Japan. In 1948, the old Imperial Japanese Lifesaving Society was renamed as the Nippon Suinan Kyusai Kai (NSKK – the Japan Lifeboat Institution). By 1955, the NSKK had recovered with 425 lifesaving stations and 18,000 volunteers around the country, using fishing vessels for rescue cases. The government no longer subsidized the institution but started to support it in terms of equipment and training. The institution began to seek funds from large corporate donors, particularly from those who were connected to the expanding shipping industry. Since 1974, both the NSKK and the Japan Coast Guard have been working together to save lives along the Japanese coastline (Evans, 2003).

3.5.2 Nippon Suinan Kyusai Kai (NSKK)

The primary objective of the NSKK is to save lives at sea and assist in the preservation of property. In 1985, the Joint At-sea First Aid Centre was established by the Japan Coast Guard and the NSKK, provide medical advice to ships and form a liaison between the ship, the hospital and the Japan Coast Guard for transporting patients.

The headquarters of the NSKK is in Tokyo and there are 24 separate regions around the nation. Now the institution boasts over 50,000 volunteers and approximately 1,000 rescue stations along the coastline of Japan. Apart from some purpose-built rescue craft, most of the rescue vessels are private fishing craft owned and operated by the NSKK members.

As a non-profit volunteer organization, the NSKK gets its funding mainly from the Japanese Ship-owners' Association and the Japanese Maritime Foundation as well as individual donations and contributions. All volunteers receive a basic compensation for call of duties as well as insurance coverage for their vessels and themselves. The NSKK provides organized training and exercise for crews regularly. Moreover, the organization also conducts a very popular fund-raising and public awareness driving activity every summer. This activity is known as the Blue Feather Campaign, which not only attracts public attention to the cause, but also gathers considerable funds (Evans, 2003).

3.6 Successful experience of developed countries

Although the stories of those countries and their particular lifesaving organizations mentioned above vary from one to another, the essential reasons for their success have revealed many similarities. The overview is given in the next

paragraphs.

3.6.1 Supportive legislation

The smooth operation of voluntary services in developed countries is highly dependent on their comprehensive legislation. Effective laws and regulations clarified the obligations and protected the rights of volunteers. This is important for keeping them motivated for voluntary work. According to the German law, for example, men are supposed to serve the military for 10 months when they are at the age from 18 to 23. In order to encourage people participating in the voluntary work, the German law also allows exemption from the military service if one participated in the prevention of disasters as a volunteer for a certain period. Meanwhile, the German government also purchases insurance for volunteers who serve the government departments or other causes related to the public welfare (Jia Q. , 2006). The Gesetz zur Förderung eines freiwilligen sozialen Jahres – Act to encourage voluntary social year and Gesetz zur Förderung eines freiwilligen ökologischen Jahres – Act to encourage voluntary ecological year provide a variety of favorable rewards to volunteers in their social life, which have encouraged quite a lot of young German people to devote themselves to the voluntary cause (Song, 2010). The United States, the UK, Japan and many other developed countries have also adopted a series of laws and regulations to protect the rights of volunteers and facilitate the voluntary activities.

3.6.2 Integrated training system

The success of every SAR case is closely related to the expertise and experience of the rescuers. Developed countries have attached great importance to training volunteers and have established strict rules and working standards for volunteers. A

comprehensive training system guarantees the quality of services provided by the RNLI and keeps this institution ahead of other SAR organizations. As the main SAR body of Germany, the DGzRS also has a long and specialized training system for volunteers. The training process is divided into two parts: theoretical training and practical exercise. All members have to use their spare time to finish all the training programs and pass all the tests to get the qualification as a SAR volunteer. On-the-job training and drills are normally provided to keep the volunteers up to date and be ready for new challenges (DGzRS, 2011).

3.6.3 Perfect cooperation

In most of the cases, SAR operations involve efforts devoted by more than one force. Perfect cooperation among all relevant forces plays a significant role in the SAR cause of developed countries. Although the RNLI, the MRCC and the navy are running independently in the UK, they show a very good collaboration and understanding between each other. By holding regular meetings, these SAR forces exchange views with each other to form a consensus in the rescue operation, which greatly improves the efficiency of maritime search and rescue work. Before setting up a lifeboat station, the RNLI must consult the MRCC; if a rescue vessel left the base, the MRCC must be informed with relevant information; if a rescue vessel was going to leave its duty area for more than 3 hours, MRCC should also be informed immediately and another rescue vessel should be arranged to take over its job. Furthermore, joint SAR exercises are regularly held among different bodies. Therefore, a clear division of different types of work has been formed which ensures the quick flow of search and rescue coordination. Continuous information exchange and frequent joint exercises have cultivated a perfect collaboration among different SAR bodies, which enables SAR work to be conducted smoothly (China MSA,

2007).

3.6.4 Various incentive measures

Because of the negative growth in population and highly competitive labor market, some countries have developed various incentive measures to maintain the number of volunteers from decreasing and attract more people to participate in volunteer services. The German government has successfully attracted and encouraged volunteers by distributing posters, brochures, organizing exhibitions and setting rewards. Currently, the Federal Office of Civil Protection and Disaster Assistance (BBK) in Germany also tries to motivate volunteers by granting different amounts of cash bonuses on December 5 every year – the International Volunteer Day (BBK, 2005).

3.6.5 Sufficient fundraising methods

According to statistics, in 2012, up to 316.23 billion dollars was donated to charitable and non-profit organizations in the United States (Charity Navigator, 2013). In addition to people's will of making contribution to the public welfare, favorable policies are also facilitating the fundraising work. Many developed countries have implemented flexible tax policies to encourage charitable donations by reducing a certain percentage of tax or even remitting the tax for the donating individuals or organizations (Perez, 2012).

In addition to adopting suitable tax policies, non-profit organizations are also taking various methods to raise the funds. As it was mentioned before, many SAR non-profit organizations such as SSRS are developing members and receiving financial supports from them. In return, the organizations are providing members with professional training and voluntary working experience. Moreover, these

organizations normally have some traditional and well-known fund-raising as well as public awareness driving activities, such as the Blue Feather Campaign of NSKK⁶. These activities not only bring considerable funds to the organizations, but also let more and more people know their cause and realize the importance of it.

3.7 Concluding remarks

By reviewing the history of coastal lifesaving and the development of maritime search and rescue volunteer organizations in the UK, Sweden, Germany and Japan, success issues identified in this chapter are:

(a) Implementing favorable laws and regulations can effectively motivate and protect volunteers as well as promoting volunteer services for SAR purposes.

(b) Establishing a comprehensive training system can help volunteers in obtaining SAR skills and ensure the quality of SAR services provided by volunteer groups.

(c) Promoting good cooperation, communication and frequent joint exercises between volunteer groups and government SAR bodies can make SAR operations more efficient.

(d) Adopting suitable incentives can assist in attracting more volunteers and keeping them motivated.

(e) Using sufficient fundraising methods can encourage public donations, reduce financial pressure on governments and volunteer groups and provide enough money to support volunteer services.

In the following chapter, the history and current situation of China maritime search and rescue will be reviewed. Volunteer groups' involvement in maritime search and rescue will be discussed in the context of China.

⁶ For more information, please visit: http://www.kantei.go.jp/foreign/asophoto/2009/06/29aoihane_e.html

Chapter IV Study on the maritime search and rescue in China

4.1 Geographic features

China is located on the east coast of the largest continent (Eurasia) in the world as well as the western margin of the largest ocean (Pacific). China has more than 32,000 km of coastline including the mainland shore of more than 18,000 km and island shore of more than 14,000 km ("Overview of Chinese Territory", 2007). From the Tokyo Bay to the Taiwan Strait, its south-east coastal area is bestrewn with harbors, estuaries and countless islands. The climate and winds there are directly affected by the seasons: the northeast wind blows hard in winter (from November to March) and the southwest wind takes place in summer (in July and August). During summer, the southwest wind is comparatively strong at the Zhujiang River mouth and tropical hurricanes (typhoon) attack China's southeast coastal areas each year with five different trails and threaten vessels and local people's lives.

The geographic conditions from the Taiwan Strait to the boundary between China and North Korea are diversified. The terrain of the coastal area near Shanghai is similar to the southeast which is bestrewn with a lot of reefs and islands. From the Yangtze estuary to the coastal area of Shandong Peninsula, which divides the Yellow Sea and Bohai Bay, the comparatively flat foreshore is up to 80 km in width. A large

number of estuaries and islands inside of the Bohai Bay create a dangerous area with shallow waters. In the area near the Taiwan Strait, winds are extremely strong during winter and gales are frequent in the northeast monsoon season.

It is also necessary to mention the conditions of the most important inland river in China - the Yangtze River. This river is 4,827 km in length. According to historical records, there was a time when only small offshore boats and other vessels with low draught could pass through its 2,091 km section from Shanghai to Chongqing. It is said that in the early time, about half of the cargos that China was exporting were transported by this river. Heavy vehicles increased the danger of navigating in this river. From Shanghai to Hankou, 965 km of the Yangtze River was full of shoals which came from the silt of floods (Changjiang Waterway Bureau, 2012).

At the confluence of the Yangtze River tributaries, strong currents with reverse flow directions created dangerous swirling waters which have caused the sinking of many small boats. Some large inland ships were also rushed off course in the turbulent rapids, hitting the river bank or submerged reefs. The very famous Three Yangtze Gorges and precipitous valleys are located respectively on the sides of the Yangtze River section above Yichang. The current here is pouring with a striking speed from the valley. When spring comes and the water level is raised by the snowmelt, the current would be as fast as a jaguar. Currently, most vessels sailing in this area have low draught, double propellers, and strong engines so they can react quickly in rip currents (Changjiang Waterway Bureau, 2012).

4.2 History of maritime search and rescue in China

Throughout China's five thousand years of history, floods overwhelmed its civilization countless times, causing big casualties and great losses. That is why

Chinese people's mother river- the Yellow River is also called the "China's Sorrow". By now thousands of Chinese people, like their ancestors, are still suffering from the uncontrolled floods.

There was a great patriotic poet named Qu Yuan who lived in the latter part of the Warring States Period (476 BC - 221 BC) when the seven individual kingdoms, Qi, Chu, Yan, Han, Zhao, Wei and Qin - contended with each other for hegemony in ancient China. Qu Yuan, who lived in the Chu State, was trusted by King Huai and did much to assist the King in governing the state. However, Qu Yuan was soon sent into exile because the monarch was misguided by some ministers and lost his trust in him. In 278 BC, upon learning that the Chu State had been defeated by the Qin, Qu Yuan, in great despair and distress, ended his life by drowning in the Miluo River in the northeastern part of the Hunan Province. When local people heard of his death, they were so grieved that they rowed some long and slim boats to search for his body but came back without finding him ("Qu Yuan", 1998). This could be considered as the first recorded search and rescue story in history. After his death until now, Chinese people are celebrating the Dragon Boat Festival on the fifth day of the fifth lunar month annually in order to commemorate this great poet, diplomat, reformer and statesman.

The implementation of search and rescue, the invention of relevant equipment and the establishment of a search and rescue organization require the spirit of humanitarianism. This humanistic civilization was born in China much earlier than it was born in the western world. Apart from the invention of rescue equipment, China also took an early step in establishing certain organizations.

In ancient China, most of the trading goods were transported through the inland rivers and canals. Natural disasters and accidents happened all the time. Businessmen and tourists had to face the danger of precipitous valleys, rip currents and shallow waters. Sailors had to confront typhoons, tropical storms, pirates and all kinds of

gangsters. In order to maintain the smooth flow of trading routes, many charitable organizations were established in China to provide escorts and ensure the safe passage of vessels through dangerous waters. Moreover, these charitable organizations also provided places of refuge for people in distress and salvaged dead bodies. According to Chinese traditional culture, family members of the deceased must see the body of the dead being buried appropriately. Therefore, salvaging the dead was and still is a humanitarian act in China.

It is said that some charitable search and rescue organizations appeared in China as early as the 13th centuries (Evans, 2003). However, no literary inscription has been found about it. The first well documented lifesaving organization was Zhenjiang Lifesaving Association, which was established by a committee of benefactors in 1708. It was located on the lower reaches of the Yangtze River near the city Nanjing. A ceremonial tablet was placed at Dantu by the local magistrate in remembrance of the original committee which established this association. The initial objectives of establishing this lifesaving association were to salvage dead bodies and to promote the knowledge about carrying out first aid on drowning people. However, no record shows whether or not this association was equipped with lifeboats before 1796.

The history of rescue boats in China inland waters can be traced back to 1737, 40 years earlier than the first rescue boat in Europe (Evans, 2003). According to records, in 1737, the local government of the Sichuan Province built five official rescue boats and sent them into the Yangtze mainstream and tributaries. In 1854, a wealthy businessman named Li Yongkui, who was living near the Three Gorges, proposed to charge passing sailing boats as compensation for small boats which could lead them to safely pass the shallow waters. His proposal was welcomed and three rescue boats were built up. Li Yongkui thought the rescue boats should be eye-catching and easy to recognize, so he had them painted bright red. Year after year,

the “red boat” became the synonym of the “rescue boat” in the inland waters of China. The organization established by Li Yongkui was then respected and supported by passengers and merchants. In 1875, the number of red boats was increased to 13. In 1883, an official from the Hunan Province was rescued by the red boat and he submitted a proposal to the emperor, suggesting that the government should support and expand this service. This proposal was approved and a government lifesaving bureau was formed. Records state that there were 1,473 people rescued by the red boats in 1899. In 1900, a German steamer Suihsing sank after it went aground and 285 Chinese as well as 33 foreigners were rescued by the red boats (Cai, 2013).

There was more than one rescue organization in China in the 1800s. However, the rescue team established by Li Yongkui was the most mature and well-organized one. It had a whole set of rules and regulations. Red boats must take endless patrols through the swirls and rip currents of the Three Gorges and strategically deploy the duty areas of the rescue boats considering the water level, the speed of the current and the number of passing ships. When there was a shipwreck, a signal detonator would be sent to gather all the rescue boats. By 1901, the Yangtze River region possessed a fleet of 44 red boats, revealing the most prosperous period for small rescue boats in China inland waters. Unfortunately, with the collapse of the Qing Dynasty, the number of red boats was dramatically reduced (Lan, 2013).

4.3 Contemporary search and rescue system in China

In 1974, China National Maritime Safety Command Center (CNMSC) was established in Beijing, followed by provincial maritime safety coordination centers. As an embranchment of the Ministry of Transport, CNMSC was in charge of the search and rescue services and the prevention of maritime pollution.

In 1989, CNMSC was renamed as China Maritime Rescue Coordination Center (CMRCC) according to the International Search and Rescue Convention, to coordinate all SAR operations across the country. In 2005, the Inter-Ministry Coordination Meeting Mechanism was established to take the overall leadership on SAR operations in China. A meeting is held once a year with the aim to decide and improve the strategies to improve SAR services in China (CMRCC, 2006).

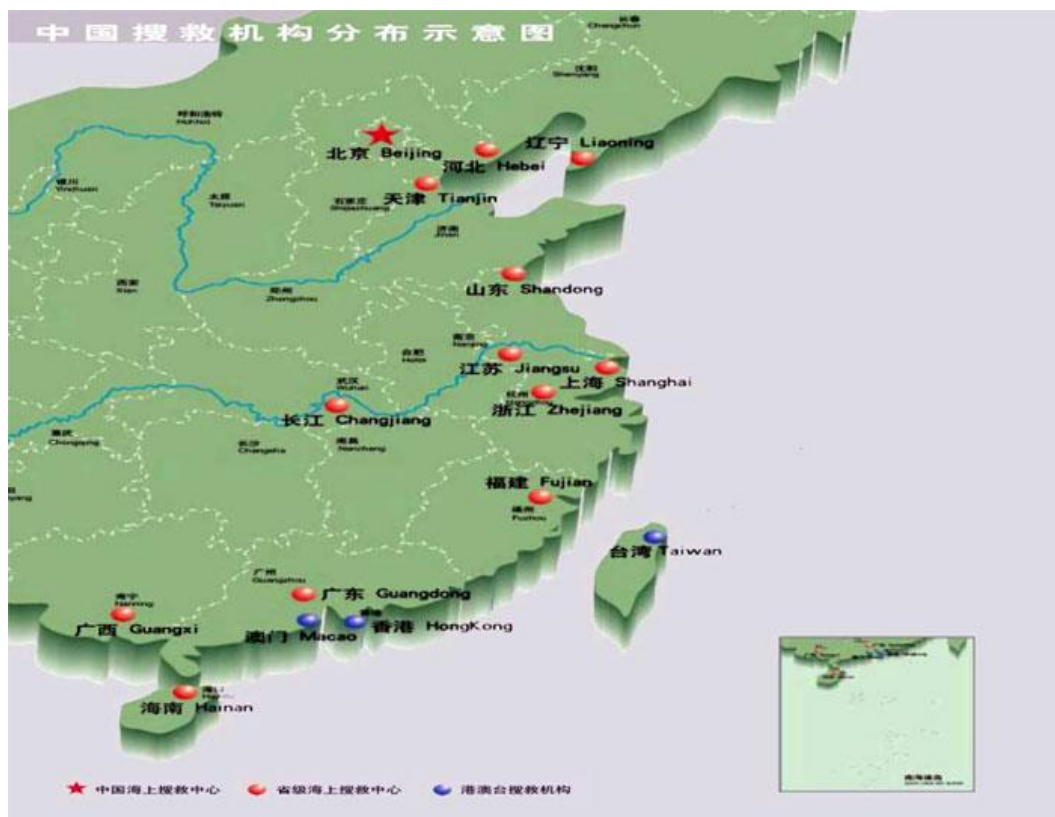


Figure 4.1 Distribution map of RCCs (Rescue Coordination Centers) in China

4.3.1 Structure and response procedure of the SAR system

CMRCC is shouldering responsibilities such as organizing, coordinating and commanding major SAR operations and emergency response to maritime pollution;

establishing an efficient communicating platform for SAR operations; and providing instructions to local RCCs. There are 12 provincial RCCs and 75 local RCCs along China's coastline and the Yangtze River.

The response procedure is described in the National Maritime SAR Emergency Response Plan (SARERP) which was first published in 2005. According to SARERP, distress information will firstly be received and dealt with by a local RCC which is in charge of the area where the distress happened. Rescue forces will be informed and sent to carry out SAR operations. If the situation is severe and the local RCC is not able to provide sufficient response, assistance will be provided immediately by the provincial RCC or from the CMRCC. CMRCC is also in charge of coordinating SAR operations with Hong Kong, Macao, Taiwan and foreign countries (CMRCC, 2006).

4.3.2 Rescue forces

The main forces to conduct SAR missions in China are the national professional SAR force and the patrol force from China Maritime Safety Administration (MSA). Other government departments, social organizations as well as the military force are also included in the national SAR web according to the Inter-Ministry Coordination Meeting Mechanism.

The national professional SAR force of China refers to the Rescue and Salvage Bureau (CRS) under the Ministry of Transport. China Rescue and Salvage Bureau includes 3 rescue Bureaus which are located in Yantai (Beihai Rescue Bureau), Shanghai (Donghai Rescue Bureau) and Guangzhou (Nanhai Rescue Bureau) respectively, and 4 Flying Services along the coastline. Currently, CRS has 19 rescue bases and has been equipped with 81 professional rescue vessels and 20 rescue helicopters. This national maritime SAR force is on 24-hour standby for SAR missions (CRS, 2012).

In addition to the CRS force, China MSA patrol vessels are also an important component of government SAR forces. There are currently 1400 vessels patrolling along the coastline and the inland waters (CMRCC, 2006).

Both CRS rescue forces and MSA vessels are under the command of CMRCC whenever distress happens. Moreover, China has developed AIS, VTS and CCTV systems within all the main ports, transferring a variety of information to CMRCC. Rescue and patrol vessels can also receive video-information of the scene through satellite communications.

4.3.3 Maritime SAR volunteer groups

With the development of the economy, the shipping and port industries are growing fast. More and more deep-water ports have been built. More and more ships carrying hazardous cargos are coming and leaving frequently every day. The SAR services provided by the government are no longer sufficient for the increasing needs. The shortage of professional rescue forces calls for additional social support. In the meantime, since Chinese people's living quality has been improved, their enthusiasm of participating in volunteer services has been encouraged and become an internal driving force.

The Chinese government is attaching more and more importance to developing volunteer groups. In 2008, the Central Commission for Guiding Cultural and Ethical Progress issued guidelines for developing volunteer groups in society. In 2009, the General Office of the State Council issued guidelines for enhancing the national emergency-response capability, emphasizing the importance of providing opportunities for different social organizations to participate in the emergency-response system. Subsequently, local governments at a continually increasing rate have issued similar and more detailed guidelines for developing

maritime search and rescue volunteer groups.

In September 2008, the first maritime search and rescue volunteer group was established in Wenzhou, Zhejiang Province. This rescue group is a subordinate team of Cangnan Volunteer Association. It has 6 rescue units located in 6 different towns, 30 voluntary boats and 150 registered volunteers. The group reports to the Wenzhou RCC and is a non-profit organization. Its main financial resources are public donations, government subsidy and bonus. The working procedures and organization structure were drawn up by the Volunteer Association. When there was a distress call, CMRCC or RCCs would evaluate the situation and decide whether volunteers were needed. Volunteers would be informed immediately by phone call and text when they were needed with the necessary information. During the rescue procedure, volunteers are under the command of national professional rescue forces or the MSA forces. (Donghai Rescue Bureau, 2009).

In May 2011, the first inland water search and rescue volunteer group was established in Jingzhou. This group is temporarily led by Jingzhou MSA and the local government. It has 3 rescue units, 4 rescue bases and 48 registered volunteers, assisting the national rescue forces to conduct SAR missions and maintaining the rescue equipment.

Recently, increasing numbers of SAR volunteer associations were established near the coast and inland waters. Maritime SAR volunteers are expected to play a more important role in the future.

4.4 Problems for the further development of SAR volunteer groups

4.4.1 Lack of legal support

The legislation regarding volunteer services and volunteers in China is lagging

behind compared to those in developed countries. So far, there is only a “China registered volunteer management approach”⁷ introduced by the central government. No national laws and regulations related to volunteer services have been adopted yet. The rights and obligations of volunteers have not been clarified and protected. By contrast, the German government purchases insurance for volunteers who serve the government departments and other causes regarding public welfare. Such a measure of protecting the rights of volunteers is necessary, particularly for SAR volunteers who are normally working in dangerous conditions. Although volunteers are supposed to cover the costs of joining volunteer services, their safety and other basic rights should be taken into consideration when regulating the national volunteer system.

Another problem is that there are currently more than one department (e.g. the Ministry of Civil Affairs and the Youth League Committee) in charge of administrating national volunteer services, which causes confusion and communicating problems in practice. From a more specific level, maritime rescue volunteer groups in China were registered in different authorities such as CRS, MSA and some local governments, which brought about the difficulties in coordinating these rescue forces efficiently.

4.4.2 Incomplete structure of SAR forces

If comparing the government rescue forces in China and in other developed countries, it is not easy to find the gap between them. China has 1400 MSA patrol vessels and over 80 professional rescue vessels, while the USCG has about 1600 patrol vessels and Japan Coast Guard has 441 patrol vessels. It seems that the SAR system in China has fulfilled the international obligations regulated by relevant

⁷ For detailed information, please visit website: <http://baike.baidu.com/view/3303653.htm>

conventions and agreements. However, if looking into the main body who is taking most of the rescue tasks, there is a difference. In China, about 75% of the SAR tasks were done by the government forces each year. As shown in Figure 4.2, only about 25% of the rescue tasks were conducted by social organizations and individuals in China. (CMRCC, 2012). However, in the UK, up to 90% of SAR missions were accomplished by social organizations (RNLI, 2012). In Japan, social organizations also played the main role of SAR forces with about 70% of the total tasks each year (JCG, 2013).

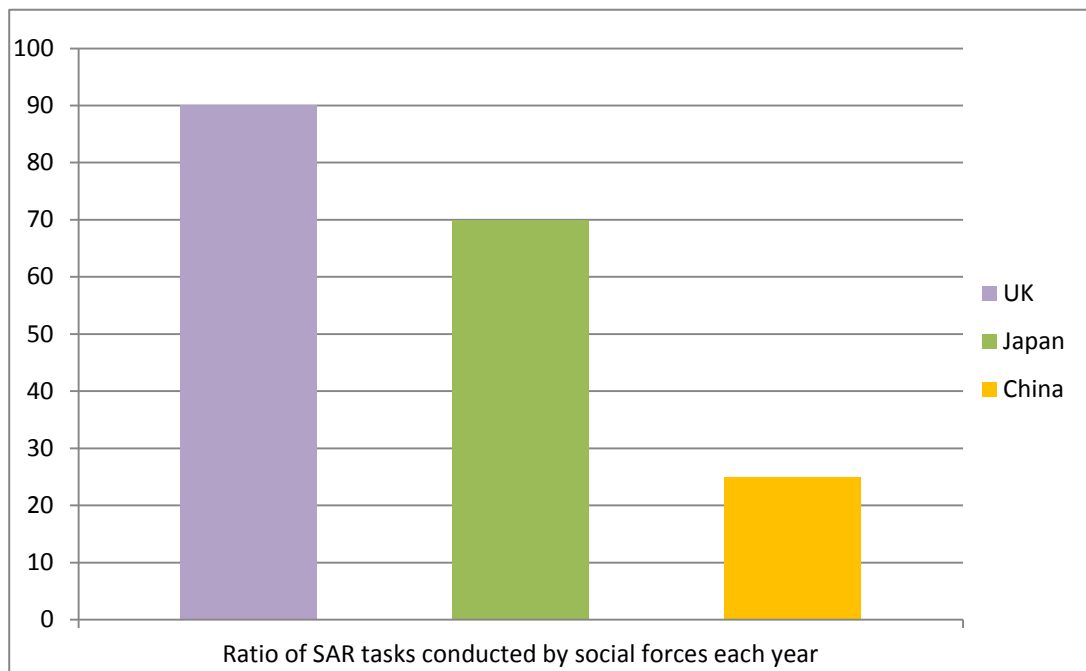


Figure 4.2 Ratio of SAR tasks conducted by social forces each year

China's social volunteer groups are not yet completely developed. Furthermore, if comparing China's SAR documents with those of the U.S. Coast Guard (USCG) the SAR manual and the U.S. national SAR Supplement, it can be found that although there is a National Maritime Search and Rescue Emergency Response Plan

(SARERP) and more than 70 local SARERPs in China, no document or manual has clearly defined different SAR forces and described the responsibilities of them. This resulted in some listed local SAR forces such as the State Ocean Administration, the Ministry of Public Security and the Customs who possess the facilities to assist SAR not being utilized or making no contributions to maritime search and rescue. In addition, social SAR volunteer groups have not been included in the national SAR forces list, which reveals the lack of cooperation between government SAR forces and the volunteer groups. The question of how to better combine all the possible forces economically and effectively in the SAR context needs to be answered.

4.4.3 Insufficient funds

According to the SARERP, the national budget and funds for supporting SAR operations are decided and granted by the central government and local governments. Due to the limitation of the budget, the amount of money available can only finance the national SAR forces such as the CRS forces and the MSA patrol vessels.

Although the government is trying to provide more financial support to maritime SAR volunteer groups, the money is far from the actual needs for running the groups. Public donations are increasing, but have not yet become a stable financial source for most of the SAR volunteer groups. Unsolved fundraising problems will greatly impact the sustainable development of maritime SAR volunteer groups in China.

4.4.4 Instability of the volunteer groups

Currently, most of the volunteers in China are using their spare time on volunteer services. The government and most of the employers have not adopted a flexible working schedule in order to support volunteer services. This creates

difficulties for many volunteers in balancing their jobs and voluntary activities, affecting the stability of the volunteer groups. For example, some SAR volunteers are working on ferry boats or yachts. As they are very familiar with the environment that they work in, they are pretty good candidates for maritime SAR volunteers in the particular area. However, some of them shift their duties too often, which affects their attendance in SAR services and leads to the frequent changes of the whole arrangements made by the SAR volunteer groups that they belong to. Volunteer services without corresponding favorable policies and a certain support from the employers will end up with instable participations and low-quality services.

4.4.5 Immature training mechanism

Search and rescue is a highly technical emergency-response service. From searching the sign of life in a shipwreck, to providing first aid treatment to a wounded, the whole SAR procedures need qualified professional skills. That is why volunteers with relevant working experience are welcomed. In some developed countries, maritime SAR volunteer organizations normally have scientific and systematic training programs. Only if the volunteers finished all the training programs, can they be accepted to participate in the SAR services. Moreover, there are also various types of training after the entering training program to further develop volunteers' SAR skills and to keep them physically and psychologically fit for the voluntary job.

Although most of the Chinese maritime SAR volunteer groups provide training programs for volunteers, the training appears to be immature and insufficient in practice. For example, some maritime SAR volunteers are from the winter swimming clubs. They may be physically qualified to be a SAR volunteer, but due to lack of training they may not be calm and proficient in real emergency situations. Some of

the volunteers have not been advised on dealing with their feelings when seeing dead bodies and severe shipwrecks. They might be too terrified to participate in the SAR work. According to research, up to 84.7% of the SAR volunteers in China have not received a systematic training on carrying out SAR operations. As shown in Figure 4.3, only 15.3% of the volunteers are truly prepared and ready for the real SAR tasks (Yuan, 2012).

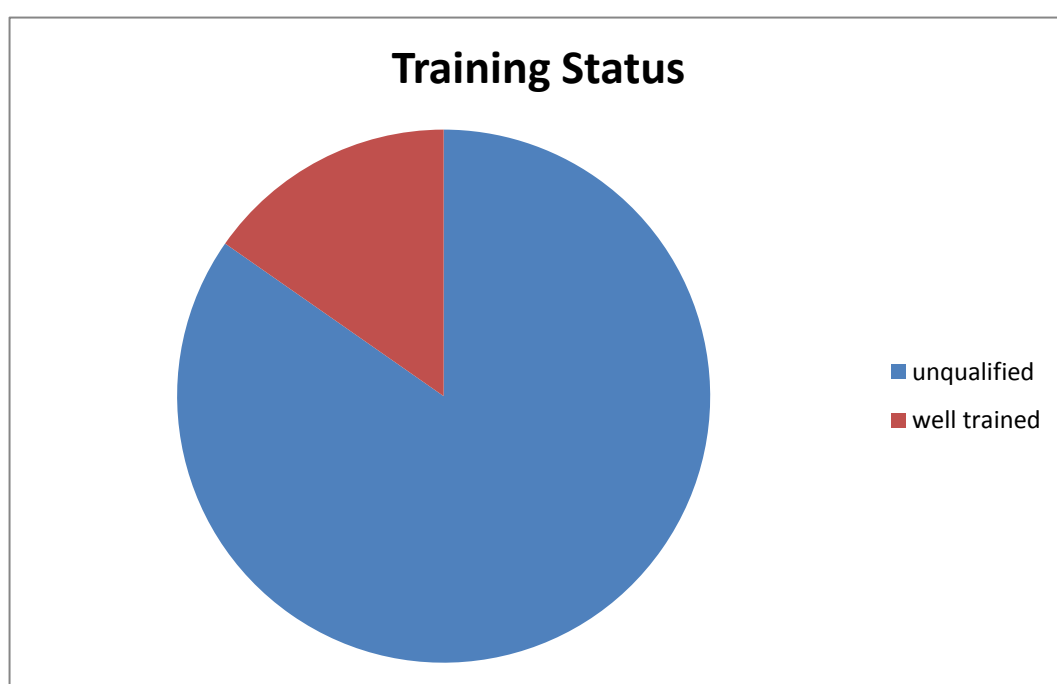


Figure 4.3 Training status of the SAR volunteers interviewed by the researcher

4.5 Concluding remarks

This chapter explores the cultural background of China maritime SAR and introduces the current maritime SAR system in China. Throughout history, maritime SAR volunteer groups have waxed and waned and now have been valued again by the government and society. However, opportunities always come together with

challenges. Problems such as lack of legal support, incomplete national SAR system, shortage of funds, instability of volunteer groups and insufficient training arrangements need to be regarded and solved by the efforts made from both the government's side and the maritime SAR volunteer groups' side.

Chapter V Suggestions for the further development of Maritime SAR Volunteer Groups in China

5.1 Legal support and publicity

To develop maritime search and rescue volunteer groups in China, the primary subject is to enact and improve laws and regulations to support volunteer services. A comprehensive legal framework may help in creating a good environment for volunteer services and protect the rights of volunteers. There is no doubt that the success achieved by non-profit volunteer organizations in developed countries depends on the sufficient legal support from their governments. Taking the United States as an example, there are now five laws and regulations regarding all-around aspects of volunteer services. They are the Domestic Volunteer Service Act Amendments of 1989, the National and Community Service Act of 1990, the National and Community Service Technical Amendments Act of 1992, the National Service Trust Act of 1993 and the Volunteer Protection Act of 1997 (Song, 2010). The adoption of these laws not only protects the rights of volunteers when fulfilling their roles, but also encourages volunteer services by protecting volunteers from liability claims for actions conducted in good faith. By implementing the laws and

relevant regulations, volunteers in the United States generally enjoy the rights such as working in a healthy and safe environment, getting enough information about the organization they are working for, being provided with sufficient training and supervision, being protected by appropriate insurance, working without discrimination, refusing the job when feeling uncomfortable and so on. In the meantime, volunteers' responsibilities are also clarified by laws and regulations. Volunteer organizations are required to have internal policies and procedures on how they manage volunteer involvement and how they deal with discrimination, grievances or complaints. According to the legislation in the United States, volunteers are expected to be accountable and punctual. They should adhere to the policies and procedures of the organizations they are working with and carry out the duties listed in the volunteer position description. Furthermore, volunteers have to undertake training as requested and show team spirit when working with other volunteers (Global Volunteers Organization, 2012). It is urgent for the Chinese government to adopt similar laws and regulations in order to protect the basic rights of volunteers and regulate liabilities of volunteer organizations as well as volunteers.

Secondly, the Chinese government should spend more efforts on the publicity of the maritime SAR volunteer services, arousing people's attention on the importance of the maritime SAR cause. China should enhance promoting the publicity of volunteer services through the media such as newspapers, magazines, websites, and TV programs.

Additionally, China can borrow ideas from some developed countries to combine volunteer services with people's daily life. For example, in the UK, a person's performance in taking volunteer jobs will be reviewed as one of the measurements when he or she is applying for a further education, finding a job opportunity or getting a promotion. China can also learn from Germany to encourage young people's participation in volunteer services by allowing exemption from the

military service and granting rewards to volunteers who made significant contributions. If a healthy connection between volunteer services and people's real interests can be built up, more and more people will be motivated to participate in the volunteer services.

5.2 Reinforcement of the maritime SAR system

As mentioned in the previous chapter, China maritime SAR volunteer groups have not yet been included in the listed rescue forces according to the National Maritime SAR Emergency Response Plan (SARERP). In the UK, however, the volunteer organization RNLI is an important member of the SAR Strategic Committee, which is written in the national SAR plan. The United States, Japan and some other developed countries also involve their maritime SAR volunteer organizations into the SAR management process (Zhang, 2008). In order to reinforce the national maritime SAR system, cooperation between government SAR forces and the SAR volunteer groups should be enhanced by involving SAR volunteer groups in the National Maritime SAR Emergency Response Plan. Agreements can be made between local government SAR services and SAR volunteer groups on taking regular joint training and exercises as well as conducting SAR services by cooperation.

Additionally, documents and manuals can be laid down to clarify different missions and responsibilities of various SAR forces in order to utilize all possible SAR forces with high efficiency.

Taking China's practical situation into consideration, the existing maritime SAR volunteer groups are still in the starting stage and they have not been mature enough to be considered as an independent and strong national SAR force. A long-term goal of establishing a National Maritime SAR Association can be set up in order to guide, coordinate and supervise all maritime SAR volunteer groups across the country in

the future. This association could be established by the Ministry of Transport and be manned with people who have experience of organizing volunteer services and people with maritime SAR expertise. The aim of this association is to facilitate the development of volunteer SAR groups, to obtain more political and financial support from the government and to raise more funds for the operation of maritime SAR volunteer groups in China.

5.3 Financial support and fundraising

Presently, there is no specific fund for maritime SAR volunteer groups in China. Although the CMRCC has set up an annual prize to award some individuals or vessels who have made significant contributions to maritime SAR, the money is far from the cost of running a single SAR volunteer group. Based on China's current situation, an integrated financing mechanism for SAR volunteer groups should be established with the support from the government, companies, the public and other possible sources in society. A National Maritime SAR Fund can be set up to gather and distribute the money raised for maritime SAR volunteer services. Since the National Maritime SAR Association has not been established, this National Maritime SAR Fund can be temporarily managed by the CMRCC. CMRCC would be in charge of applying subsidy for SAR volunteer groups from the central government, organizing various fundraising activities, evaluating different maritime SAR volunteer groups and distributing the funds according to the evaluation. When the National Maritime SAR Association is formed, CMRCC should hand over these duties to the association and become a supervisor of both the association and the SAR fund.

5.3.1 Government subsidy and tax-deductible policy

As mentioned previously, China government maritime SAR forces are funded by the central government. In the author's opinion, local governments, particularly those from coastal areas and near inland waters should also make a certain financial contributions to the SAR services, because they are directly benefiting from the maritime SAR services. Since the government maritime SAR forces are no longer capable of providing sufficient response to all the emergencies, the existence and development of maritime SAR volunteer groups will help the local governments to strengthen their emergency-response capabilities, maintain the local maritime safety situation and facilitate the local economic growth.

Another important measure for China to take is to adopt the tax-deductible policy to encourage public donations. Individuals or groups who make financial contributions to the public services, such as the maritime SAR volunteer services, may get a confirmation letter mentioning the amount of money donated from the relevant authorities, such as the National Maritime SAR Fund, and present the confirmation letter to the tax authorities to enjoy a percentage of tax deduction. Practice in many developed countries has proved that this policy can effectively encourage people to donate for charities and public services and increase the money raised for volunteer organizations.

5.3.2 Financial support from the benefiting industries

Apart from the government, there are some industries (e.g. shipping industry, fishing industry, travel industry, insurance industry) which are directly or indirectly benefiting from the maritime SAR services. These industries are also obliged to provide support to the development of maritime SAR volunteer groups.

Maritime SAR services could become one small part of port dues for its contribution to the safety of the harbor area. In addition, saving lives and property in distress also means saving the insurance payments made by the insurance companies. In return, a certain percentage of the saved insurance payments can be donated by the insurance companies to fund SAR volunteer services. Furthermore, coastal travel industries, fishing companies and other relevant industries which benefit from the maritime SAR services should also be considered as the sponsors for the maritime SAR volunteer services.

According to the International Convention on Salvage 1989 (IMO, 2010) and China Maritime Law, government salvage bureaus can conduct commercial salvage projects. In the author's opinion, part of the income of government salvage projects can also be contributed to the SAR fund for developing maritime SAR volunteer groups across the country.

5.3.3 Public donations

As a matter of fact, Chinese people are generous and always ready to provide help whenever needed. An example is that in 2008, after the Wenchuan Earthquake, Chinese people donated 55.458 billion RMB within only a few days. The reason for insufficient donations for maritime SAR volunteer services is partially because of its publicity and limited fundraising methods. Actually, various fundraising methods can be adopted to attract people's attention to the importance of maritime SAR services. Activities like holding maritime SAR exhibitions, providing free lectures on SAR knowledge and organizing public awareness driving activities such as the Blue Feather Campaign of NSKK may help more and more people to realize the meaning of maritime SAR services and to donate more money for the SAR volunteer groups.

5.3.4 Lotteries

In China, the regulated lottery industry was launched in 1987 and has been flourished for more than twenty years. Currently, there are two permitted lottery operators in China, namely, the Welfare Lottery and the Sports Lottery. According to statistics, the lottery sales in China have increased at a compound annual growth rate of 33% between 1987 and 2012 (Ministry of Finance, 2013). The remarkable growth has enabled the two lottery operators to provide significant funds for the public services such as financing social welfare programs in the country and building community sports facilities. As a public service which protects people's lives and properties at sea and inland waters, maritime SAR volunteer services have enough reason to be granted with a funding from the lottery industry, especially from the Welfare Lottery.

5.4 Training

5.4.1 Training procedure

Maritime SAR is an emergency response service which requires volunteers to be skill-based and in good psychological condition. The procedure of producing qualified maritime SAR volunteers should include four steps: training, qualification, certification and exercise.

Maritime SAR volunteer groups can organize the training program by themselves. Government maritime SAR organizations such as China Rescue Bureau and China MSA should support them by sending professional trainers and sharing training devices. After the training, the maritime SAR volunteer groups will decide whether or not a volunteer is qualified to conduct SAR operations and the

government authorities such as China MSA will officially issue the certification to qualified volunteers. SAR volunteer groups can conduct drills and exercises by themselves and with the government SAR forces.

5.4.2 Training items

A complete training system should involve basic knowledge introduction, practical exercise and psychological consultation. In the theoretical training stage, volunteers are supposed to learn maritime SAR knowledge, The National Maritime SAR Emergency Response Plan (SARERP), SAR procedures, how to conduct first-aid treatment, and how to carry out maritime firefighting by attending lectures. Professional trainers can be invited from China Rescue and Salvage Bureau or from the SAR volunteer organizations in developed countries. SAR volunteer groups can provide lectures by themselves on the subjects of internal policies and procedures of the organization, volunteer behaviors and values that are expected, laws and regulations on volunteers, rights and obligations of volunteers and so on.

Regular practical exercise plays an important role in fulfilling a volunteer's expertise and it is the best way to evaluate the quality of the first stage training. China's government SAR forces such as CRS and MSA should assist SAR volunteer groups in holding exercises and drills as well as sharing the governmental SAR training facilities with them. What is more important is that joint training and exercises between government SAR forces and volunteer groups should be held regularly to help the volunteers in achieving practical training and getting familiar with the real SAR conditions. Moreover, regular joint training and exercises will make the cooperation between volunteer groups and government forces more smooth and the SAR operations more efficient in practice.

Last but not least, psychological consultation should be provided to maritime

SAR volunteers. Maritime SAR is a dangerous activity in which the rescuers are risking their own lives when saving others. Tense atmosphere, bad weather and sea conditions will make normal people panic. Maritime SAR volunteer groups should provide psychological consultation for volunteers either by employing professional counselors or by cooperating with counselors from outside when needed. Lectures on how to deal with the stress from SAR services should be held regularly for volunteers. Furthermore, providing individual counseling for volunteers whenever needed should also be considered as one of the volunteer groups' obligations. Long-term counseling can help volunteers in releasing their pressure and become calmer and braver in the SAR operations.

5.5 Encouragement and compensation

Currently, the Chinese government has set up a Maritime Search and Rescue Prize to reward those people who devoted themselves in preventing the loss of life and property at sea as well as preventing ocean pollution and avoiding big social impact (Zhang, 2008). In addition to this, some other spiritual rewards such as a title of honor, and publicity in the social media may also be used in order to encourage volunteers and motivate the public.

Apart from the financial and spiritual rewards, a reasonable compensation can be provided to maritime SAR volunteers, which will cover the basic costs for taking on a SAR task. Moreover, in order to make volunteers more comfortable and stable with the SAR services, personal, medical, accident and other types of insurance can be provided either by the government, or by the national SAR fund.

5.6 Concluding remarks

This chapter tries to answer the question of how to develop maritime SAR

volunteer groups in China. By reviewing the successful experience of developed countries as well as the present conditions in China, suggestions are made from five different aspects:

(a) Laws, policies, regulations and other approaches should be adopted to protect and promote volunteers and volunteer services.

(b) Efforts should be spent on facilitating the cooperation between government maritime SAR services and volunteer groups.

(c) An integrated financing mechanism should be established to facilitate the fundraising work for maritime SAR volunteer services with the government, the beneficiaries, the public and other possible financial sources involved.

(d) A comprehensive training system should be built up to guarantee the quality of services provided by maritime SAR volunteer groups. Joint training and exercise courses should be held regularly between the government SAR forces and the volunteer groups.

(e) Proper encouragement and compensation can be provided to inspire and maintain the motivation of maritime SAR volunteers.

The next chapter will make an overall conclusion of this study.

Chapter VI Overall conclusions

With the economic development and the frequent trading with other countries, China is faced with increasing maritime emergencies. Many developed countries that had similar situations have proved that professional maritime SAR volunteer groups can effectively assist the government in saving lives and property in distress and preventing maritime accidents and disasters.

By introducing the definition of rescue at sea and volunteer services as well as the relevant theories on volunteer work, this study summarized the main characteristics of maritime SAR volunteer services, pointing out the elements of organizing a maritime SAR volunteer group.

This study also made a detailed research on the historical development of several well-known maritime SAR volunteer organizations in developed countries, finding the reasons and conditions for their existence and examining their structure and operating models. Chapter III explained why these SAR volunteer organizations could be successful and made a conclusion of what experience could enlighten China in developing its maritime SAR volunteer groups. Supportive legislation, an integrated training system, perfect cooperation, various incentive measures and sufficient fund-raising methods were identified as the key elements for success.

With the aim of finding feasible solutions to develop maritime SAR volunteer

groups in China, this study firstly reviewed the geographic features of China and described the maritime SAR history in this ancient kingdom. It is undoubted that China is a country with long history of maritime SAR. The idea of voluntary SAR operations was implemented a long time ago and had been implanted in the minds of coastal inhabitants and people living near inland waters. The study tried to prove that China boasts a good cultural heritage to establish and promote maritime SAR volunteer groups again.

Chapter IV introduced the contemporary search and rescue system in China with information about the structure and response procedures of this system, the national SAR forces and the current development of new maritime SAR volunteer groups. Although the national maritime SAR forces are well equipped and widely disposed around the country, the actual demand for maritime SAR forces surpasses what the government could provide. Therefore, it is necessary to promote another non-government SAR force in the country. However, many problems such as lack of legal support, incomplete structures, insufficient funds, instability of the volunteer teams and immature training mechanisms are hindering the maritime SAR volunteer groups in China, causing a low rate of participation and tardiness in development.

By comparing developed countries, this study made some suggestions on how to develop modern maritime SAR volunteer groups in China. Based on the current situation, developing strategies were put forward with respect to the legal support and publicity, the reinforcement of the national maritime SAR structure, the financing aspect, the training program and the incentive methods.

Because of the complexity of volunteer management and the influence of both objective and subjective factors, some limitations of this study remain. For example, how to design a scientific performance appraisal of maritime SAR volunteers and how to establish the auditing system for the SAR fund have not been discussed in this study. Obviously, further studies should be taken in the near future. Lessons and

good experience are often learned through practice. The author believes that by applying the successful experience achieved by developed countries, China would gradually form a strong non-government maritime SAR power to safeguard its vast coastal area and inland waters.

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